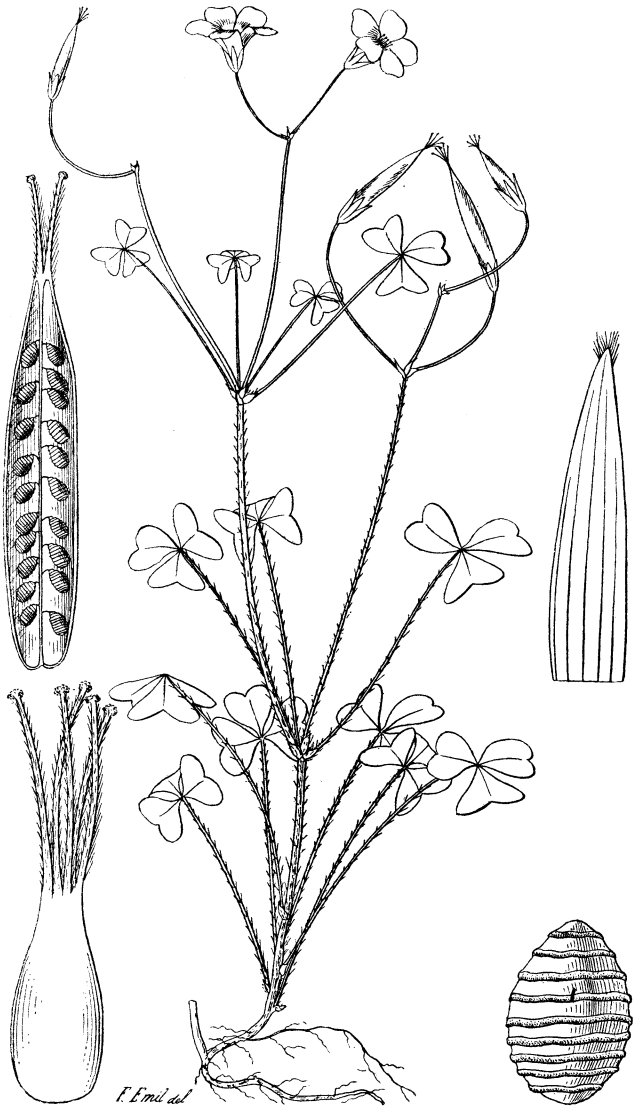
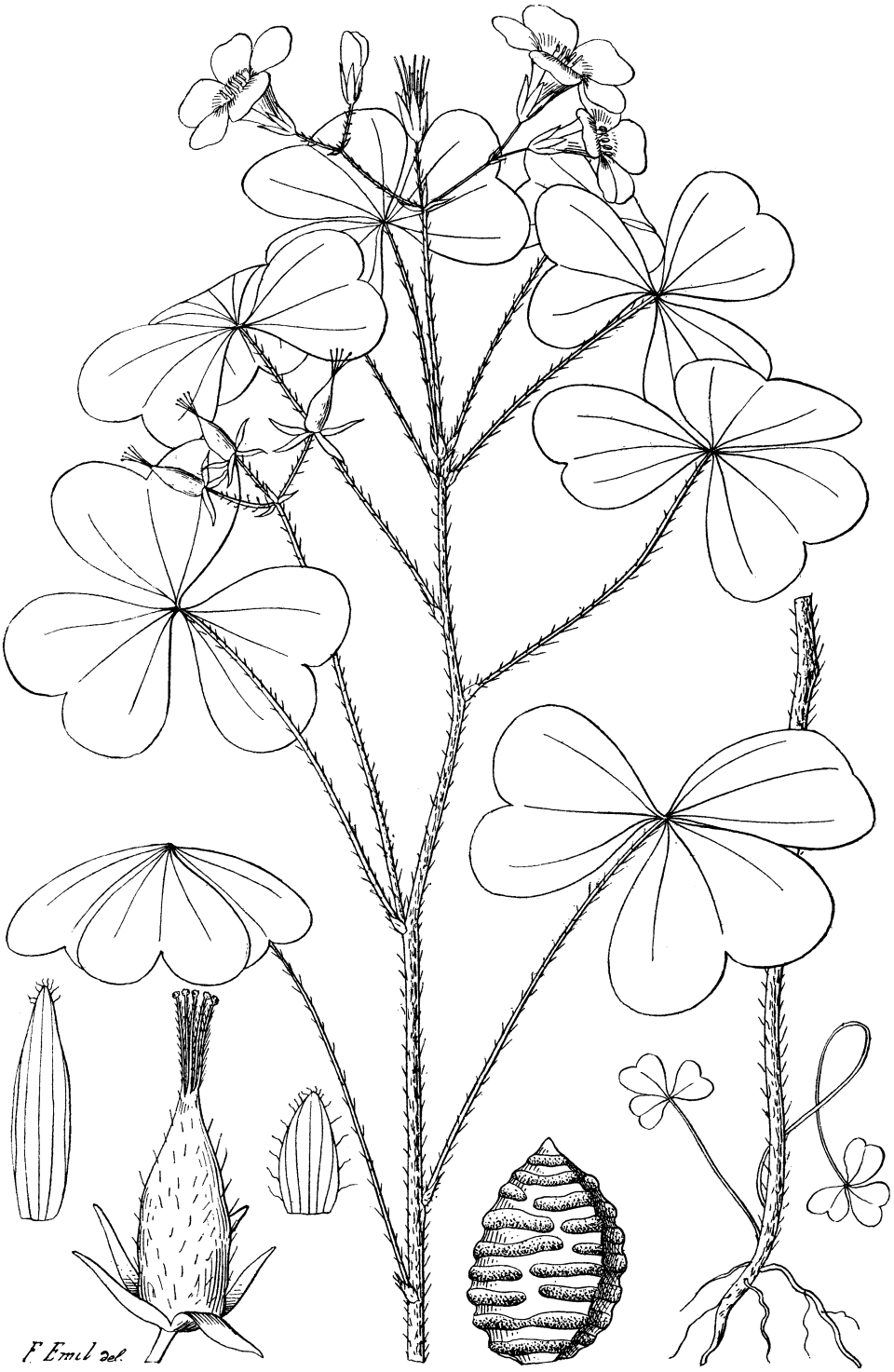


OXALIS RECURVA ELL.



OXALIS GRANDIS SMALL.

will at once show that the latter is apparently identical with *L. populoides*, which supposition is supported by the fact that they were both found in the same geological horizon (Dakota group) near Morrison, Colorado. The one difference between them is the winged petiole which is such a prominent characteristic in our specimen. Its absence in Lesquereux' specimens is doubtless to be accounted for by the imperfection of his material, but a close examination of his *fig. 2* will show that there is a widening of the petiole where it is broken off, which evidently indicates the existence of similar appendages.

Finally I would call attention to a point which may have considerable significance in relation to the theory of the origin of stipules previously outlined. The specimens which are the subject of our illustration apparently represent a large mature leaf and a smaller immature one. In the mature leaf there is a distance of about three-eighths of an inch between the base of the leaf blade and the beginning of the winged appendages, while in the young leaf they are in juxtaposition, conditions which are to be expected if our theory of their origin is the correct one.

NOTE.—Since writing the above Dr. Britton has called my attention to the following, which is of peculiar significance in this connection:

The late Dr. Thomas Morong, in his manuscript of "The Smilaceæ of North and Central America," in speaking of the species which climb by means of tendrils growing from stipular wings on each side of the petiole, uses these words in a foot note: "De Candolle regards this appendage as more in the nature of a modified leaf segment or leaflet than a stipule, but it seems to me that a stipule is nothing else than a leaflet at the base of a petiole."*

Two Species of Oxalis.

BY JOHN K. SMALL.

(PLATES 222 AND 223.)

For several seasons during my excursions through portions of the Southern States I have met with a peculiar little *Oxalis*,

* See Bull. Torr. Club, 21: 419.

which became more and more interesting, as it was discovered at new and widely separated localities. For some reason every time I encountered the plant it suggested to me the name *Oxalis recurva*. After Elliott published that species* it received little recognition in the works of later botanists, and by them was generally recorded in an arbitrary manner as being identical with *O. stricta* or ignored altogether. When Dr. Trelease revised the genus in 1888† he attempted to reestablish Elliott's *O. recurva*, but, not having access to the type specimen, he went widely astray of the mark and applied Elliott's name to a very different plant. Dr. Trelease was apparently a little too unmindful of the laws of geographical distribution in concluding, especially without having seen the original specimen, that *O. recurva*, discovered on the coast of South Carolina, was a typically Middle States species.‡

As recorded in the MEMOIRS of the Torrey Botanical Club, 2: 44, Dr. Britton and party found what was then supposed to be *Oxalis recurva* at Roanoke and Eggleston's, Virginia. The following year (1891) Mr. Heller and myself, while passing through Roanoke, picked up some small specimens along the south bank of the Roanoke River, and pronounced them *Oxalis recurva*, on account of the strongly recurved pedicels; but on learning what was then known as that species, and being unable at that time to learn the cause of an evident confusion, the specimens were distributed as *Oxalis stricta*. Besides this locality, we also found similar plants a few days later near Gold Hill, in middle North Carolina. Little more was thought about the matter until the same plant turned up again further to the southwest, at the Falls of the Holston River, in Smyth county, Virginia, during the expedition of the Torrey Botanical Club to that region in 1892. In the report on that excursion§ the plant was reluctantly placed under *O. stricta*, and the supposed *O. recurva*, found further up the same river, recorded as such. In the spring of 1893, while collecting in company with Dr. Britton about the Great Dismal

* Bot. S. C. & Ga. 1: 526.

† Mem. Bost. Soc. Nat. Hist. 4: 71–104.

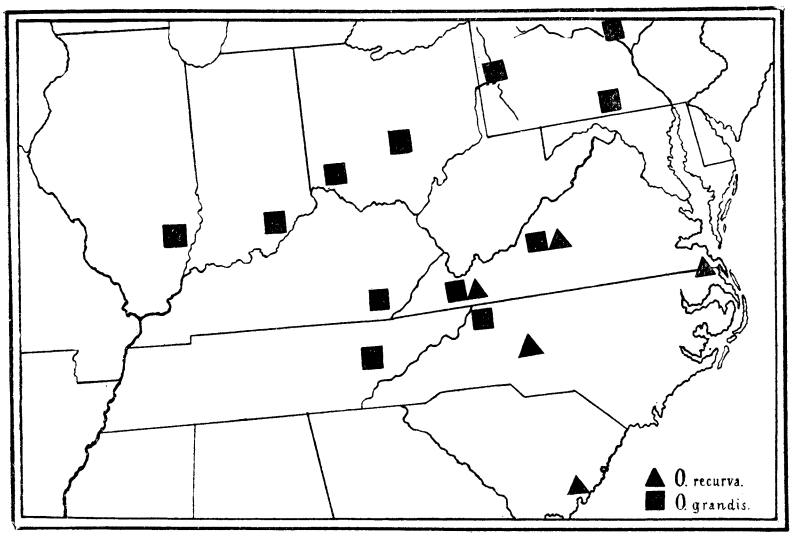
‡ Mem. Bost. Soc. Nat. Hist. 4: 87.

§ Mem. Torr. Bot. Club, 4: 109.

Swamp, the plant was found near North West, in southeastern Virginia.

Now with this geographical range to support a well-marked form the question arose: What is the plant? A new or a lost species?

While in Charleston last winter, I had an opportunity to examine the type of *Oxalis recurva* in Elliott's herbarium, at the Charleston College, and was not surprised to find that the small plant, which had been recently collected as cited above, was the same as Elliott's type. A comparative study of this form and the supposed *O. recurva* shows each to have, first, strong and constant morphological characters, which separate them from each other and related species, and second, a remarkably well-defined geographical range. A glance at the accompanying plates will convince any one of the specific validity of the two forms.



After dispensing with this part of the difficulty, a second question arose: What is the plant that has been passing for *O. recurva?* This form has been lying in herbaria, under one name or another, or unnamed, for many years. As far as I can discover, it appears to have been first found by Carey, at Wysox, Pennsylvania, in 1836, and then by Porter, at Mercersburg, in the same State, in 1850. During the last decade, especially the latter part,

this plant, apparently rare, has become epidemic, being found successively at Mt. Carmel, Ill.; Hanover, Ind.; Cincinnati, Ohio; Roanoke and Eggelston's, Va.; Wall, Pa.; Franklin Co., Ohio; Marion, Va.; Knoxville, Tenn.; the Cumberland Mountains, Ky., and Caldwell Co., N. C. I have searched carefully through the books containing references to the genus *Oxalis* and compared descriptions and plates. Nothing in them seems to correspond to the plant in question, and, as far as I can learn, it never has received a name except that given to it erroneously. *Oxalis grandis* is a name that will serve to designate its size and the stately habit it assumes in growing.

The two species are so very dissimilar that no detailed account of their respective characters is necessary, but descriptions and plates are added, which will serve to show the great contrasts between them. As mentioned above, the geographical ranges are remarkably well defined, and a map is also given, on which the stations and ranges are plotted as they are now known. The range of *O. recurva* lies mainly to the east of the Allegheny Mountains, while that of *O. grandis* is for the most part west. The two ranges meet on the mountains at the Roanoke and Marion stations in Virginia. At present, then, we have two beautifully contrasted geographical areas for the two species under consideration, but as exploration goes on, in and about the mountains, we may expect to find more or less over-lapping of the two ranges.

OXALIS RECURVA Ell. Bot. S. C. & Ga. 1 : 526 (1821).

Annual or perennial by a very slender rootstock or wiry stolons, slender, sparsely pubescent, dark or purplish green. Stem erect, 1–2 dm. long, wiry, mostly simple, leafy throughout; leaves small, .5–1.5 cm. broad; leaflets obcordate, as long as broad or longer than broad, sometimes acuminate at the bases, nearly glabrous or sparsely pubescent, sinus deep, acute; petioles 3–4.5 cm. long; inflorescence umbellate; pedicels 2–4, much recurved in fruit, 1–1.5 cm. long, usually glabrous; peduncles 5–7 cm. long; calyx 4 mm. long, parted to near the base, segments oblong-lanceolote, obtuse, with a tuft of trichomes at the apex; corolla deep yellow, 7 mm. long, petals emarginate; styles pubescent with appressed hairs; stigmas entire; pod slightly curved, 8–12 mm. long, more or less pubescent; seeds oblong or ovoid, 1 mm. long, obtuse, brown, marked with continuous, transverse ridges (Plate 222).

Geographical and altitudinal range: Charleston, S. Carolina, at sea-level (Elliott); North West, Virginia, at sea-level (Britton & Small); Roanoke, Virginia, altitude 1000 feet (Small & Heller); Falls of the Holston River, southwest Virginia, altitude 2000 feet (Small); Gold Hill, North Carolina, altitude 200 feet (Small & Heller).

OXALIS GRANDIS n. sp.

Oxalis recurva Trelease, Mem. Bost. Soc. Nat. Hist. 4: 89 (1888), not Ell.

Annual or perennial by a slender rootstock, rather stout, nearly glabrous or villous throughout, pale or light green. Stem erect, 2–4 dm. long, simple or sometimes sparingly branched, leafy above, soon naked below; leaves large, 4–7.5 cm. broad; leaflets usually unequal, obcordate, broader than long, mostly with a brown margin, more or less ciliate, sinus shallow but acute; petioles 4–12 cm. long; inflorescence subcymose or cymose; pedicels 1–1.5 cm. long, straight in fruit, pubescent, bearing one or two pairs of bracts; peduncles 8–13 cm. long; calyx 4–6 mm. long, parted to the base, segments unequal, ovate or linear-oblong, pubescent about the apex, sometimes sparsely ciliate and revolute; corolla bright yellow, 12–15 mm. long; petals 3–5 times as long as the sepals, not emarginate, with dark striæ about the centre or near the base; stamens persistent; styles very pubescent with spreading hairs; stigmas entire; pod narrowly-ovoid or oblong, acute, 8–10 mm. long; seeds 2 mm. long, rather unsymmetrical, oblong, acute, marked with interrupted transverse ridges and two conspicuous longitudinal ridges or crests on the back. (Plate 223.)

Geographical and altitudinal range: Wysox, Pennsylvania, altitude 700 feet (Carey); Wall, Pennsylvania, altitude 800 feet (Seal); Franklin county, Ohio, altitude 750 feet (Werner); Cincinnati, Ohio, altitude 500 feet (Lloyd); Hanover, Indiana, altitude 1000 feet (Barnes); Mt. Carmel, Illinois, altitude 450 feet (Schneck); Knoxville, Tennessee, altitude 1000 feet (Kearney); Caldwell county, North Carolina, altitude 2500 feet (Heller); Roanoke, Virginia, altitude 1000 feet (Britton); Marion, Virginia, altitude 2100 feet (Miss Vail); Cumberland Mountains, southeastern Kentucky, altitude 1000–2000 feet (Kearney); Mercersburg, Pennsylvania, altitude 750 feet (Porter).